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Technical Report 925

Development of a Measure of Family Adaptation to the Army

**Dennis K. Orthner, Laura I. Zimmerman,
Gary L. Bowen, and Gary Gaddy**

The University of North Carolina at Chapel Hill

D. Bruce Bell

U.S. Army Research Institute

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EDGAR M. JOHNSON
Technical Director

JON W. BLADES
COL, IN
Commanding

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Technical review by

Hyder Lakhani
Jacquelyn Scarville



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The findings were interpreted in terms of their value to military researchers, service providers, and policy makers. Researchers can use the new measures to assess the strengths and adaptability of the military families in their investigations. Service providers can target specific factors to improve family wellness and adjustments. Policy makers can use the data to establish unit, installation, or service-wide policies that strengthen the abilities of families to meet their needs and adapt to military demands and contingencies.

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**Dennis K. Orthner, Laura I. Zimmerman,
Gary L. Bowen, and Gary Gaddy**

The University of North Carolina at Chapel Hill

D. Bruce Bell

U.S. Army Research Institute

Personnel Utilization Technical Area

Nora K. Stewart, Chief

Manpower and Personnel Research Laboratory

Zita M. Simutis, Director

U.S. Army Research Institute for the Behavioral and Social Sciences

5001 Eisenhower Avenue, Alexandria, Virginia 22333-5600

Office, Deputy Chief of Staff for Personnel

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FOREWORD

The Army Family Research Program (AFRP) is a 5-year integrated research program started in November 1986 in response to research mandated by the Chief of Staff of the Army's White Paper, 1983: The Army Family and subsequently by The Army Family Action Plans (1984-1989). The objective of the research is to support The Army Family Action Plans through research products that will (1) determine the demographic characteristics of Army families, (2) identify positive motivators and negative detractors to soldiers remaining in the Army, (3) investigate the determinants of operational readiness, and (4) examine factors contributing to family well-being and the sense of partnership between families and the Army.

This report focuses on the development of a valid and reliable measure of family adaptation to the Army. This is an important first step in examining the extent to which families have adjusted to the demands of Army life. Structural modeling was used to identify a "best fit" model for the adaptation measure. The measure, as defined in this paper, will be used in subsequent AFRP research modeling soldier retention and readiness. This report has been forwarded to the Community and Family Support Center (CFSC) to be used in future program evaluations.

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is conducting this research. It is an important part of the mission of ARI's Personnel and Utilization Technical Area (PUTA) to investigate the relationship between family factors and soldier retention and readiness and to explore family adaptation to the Army environment.



EDGAR M. JOHNSON
Technical Director

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DEVELOPMENT OF A MEASURE OF FAMILY ADAPTATION TO THE ARMY

EXECUTIVE SUMMARY

Requirement:

This research supports The Army Family Action Plans by developing a measurement model and a set of scales that identify the factors associated with family strengths and family adaptation to the military. It supports the need for data on how to develop programs and services that assist families in making adjustments to military demands.

Procedure:

The data were collected from a randomly selected sample of 11,635 soldiers in 1989. The analysis was conducted on 6,706 married soldiers who were living with their spouses. A model of the relationships between family conditions, family strengths, and family adaptation was hypothesized, and the appropriate variables associated with these constructs were identified. Structural modeling was used to analyze the data and optimize the fit between the proposed variables and the hypothesized relationships and constructs. Based on the final model, two scales were constructed.

Findings:

A final model of the relationships between Army family conditions, family strengths, and family adaptation was statistically supported. The significant predictors of family strength include low marital separation risk, marital communication, marital satisfaction, family coping, and family coherence. The significant predictors of family adaptation include family adjustment to the Army, spouse support for the Army, and Army-family fit. The family strengths scale indicates a family's ability to cope with demands. The family adaptation scale indicates the family's adjustment to organizational demands. Each of these scales indicate high levels of internal reliability.

Utilization of Findings:

The findings from this research may facilitate the work of military researchers, service providers, and policy makers. Researchers can use the new measures to assess the strengths and adaptability of the military families in their investigations. Service providers are informed of the factors that they can target in order to improve family wellness and adjustments. Policy makers can use the data to establish unit, installation, or service-wide policies that strengthen the abilities of families to meet their needs and adapt to military demands and contingencies.

DEVELOPMENT OF A MEASURE OF FAMILY ADAPTATION TO THE ARMY

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DEVELOPMENT OF A MEASURE OF FAMILY ADAPTATION TO THE ARMY

Introduction

The concept of family adaptation to organizational demands has become increasingly important to researchers and policy makers who are concerned with the reciprocal impacts of work and family stress (cf. Orthner & Bowen, 1990). Work organizations that dominate the environment for families, such as the military, churches, and large corporations, can exert unusual pressure on families to alter their expectations and patterns of behavior in response to work requirements (Bowen & Orthner, 1989). The military services, especially because of their mission readiness, training, and deployment requirements, tend to be unusually demanding on families. Demands are often placed on families to respond in ways that facilitate coping for the service member. If family adaptation to the military is positive, it is believed that the service member will perform responsively to his or her job requirements, experience higher job morale, and probably continue a career in the service beyond their current obligation (Etheridge, 1989).

Since the late 1970s, there have been an increasing number of research efforts in the U.S. military investigating the relationship between family factors and the morale, productivity, and retention of service members (Bowen & Orthner, 1989). The increased emphasis placed on family factors in models predicting mission-oriented outcomes has paralleled changing demographic patterns in the U.S. military from a predominantly single to a predominantly married force, increased attention in the social and behavior sciences to larger contextual and situational influences in examining work-related behaviors and outcomes, and the search by organizational researchers in military settings for models with greater explanatory and predictive validity.

These examinations have succeeded in identifying a number of family-related constructs, the most common of which have been family conditions, family strengths, and family adaptation. In some cases, measurement indicators that are hypothesized to underlie these various descriptive dimensions of family life have been shown to have either a strong direct or indirect influence on mission-related outcomes. For example, the level of support that service members receive from their spouses for continuing their military careers has been shown consistently to be a strong predictor of their retention intentions (Bowen, 1989; Etheridge, 1989; Orthner, 1990; Orthner & Pittman, 1986).

Despite the importance of measurement indicators, such as spouse support, to improve understanding and variation in mission-related outcomes, organizational researchers have struggled to conceptually and operationally distinguish family-related outcomes, like family adaptation, from the family-related conditions and processes that are hypothesized to influence these outcomes (Bowen, 1990; Lavee, McCubbin & Patterson, 1985; Orthner & Bowen, 1990). This difficulty has hampered consistent modeling and measurement of family-related constructs across investigations, restricting efforts that are directed toward theory building and testing. Such conceptual clarification, modeling, and measurement are not just academic exercises; they are first-order tasks both in theory development and in the design of intervention strategies (Shehan, 1985). In addition, such activities are critical to effective coordination among various research teams and thus to the efficient use of the limited resources that are earmarked for research activities.

Three family-related constructs were central components in the statement of work that guided the development of the Army Family Research Program (AFRP) and in the theoretical model that was developed to guide subsequent research activities and the coordination of research teams: Family Adaptation, Family Strength, and Family Conditions. This investigation builds upon earlier theoretical work (Bowen, 1990; Lavee et al, 1985; Orthner & Bowen, 1990) to: (a) conceptually distinguish these constructs, (b) model their interrelationship, and, using data collected from 11,035 active duty Army soldiers and an analytic strategy incorporating structural modeling with latent variables, (c) empirically confirm the measurement subcomponents that are hypothesized to underlie each construct as well as to test the interrelationship among the constructs themselves. The primary objective of the empirical analysis was to generate empirical measures of these constructs that could be used by each research team to provide consistency in the overall testing of the theoretical model that frames the AFRP.

Methods

Instrumentation and Data Collection

The data for this study were collected using a questionnaire for Army soldiers designed to gather information on Army soldiers' backgrounds, their families, their units, work and community environments, soldier career plans, attitudes and values toward the Army, personal performance, personal and family relationships, and adaptation to Army life. The questionnaire consisted of 449 items and took approximately 1 hour and 15 minutes on average to complete. Data were collected between February and December of 1989.

Most data collection was performed in group administrated sessions on site at the installations by trained data collection teams. For those that could not attend the group sessions, the questionnaires were forwarded by the unit. To ensure confidentiality of the soldiers responses, special instructions were provided for these surveys along with return envelopes secured with special tape.

The sample was chosen using a three-level sampling technique known as multi-stage cluster sampling. The first stage sample was at the installation level, the second stage from the units within selected installations and the third stage consisted of soldiers within selected units. The sample consisted of 11,035 soldiers representing 542 eligible units from 43 sites. The sub-sample used for this analysis consisted of 6,706 married soldiers living with their spouses at the time of the survey.

Model Specification

Consistent with earlier theoretical summaries (Bowen, 1990; Orthner & Bowen, 1990), the following nominal definitions are offered of the three family-related constructs that were the focus of this investigation. Each construct was considered a latent variable in the analysis.

Family Adaptation: characteristics of the family that indicate adjustment to external organization demands

Family Strengths: characteristics of the family that increase its capability to cope with internal and external demands

Family Conditions: characteristics of the family that indicate the level of role demands that the family is experiencing

Figure 1 represents the hypothesized relationships among the three latent variables in the analysis. Family conditions, the exogenous variable in the model, were hypothesized to have a direct and linear influence on family strength and an indirect linear impact on family adaptation through its relationship with family strength. Family strength was hypothesized to have a direct and linear effect on family adaptation.

Based on earlier research and prior attempts at theoretical integration (Bowen, 1989; Bowen, 1990; Lavee et al., 1985; McCubbin, Patterson, & Lavee, 1983; Orthner & Bowen, 1990; Orthner & Pittman, 1986; Styles, Janofsky, Blankenship, & Bishop, 1988), three to five

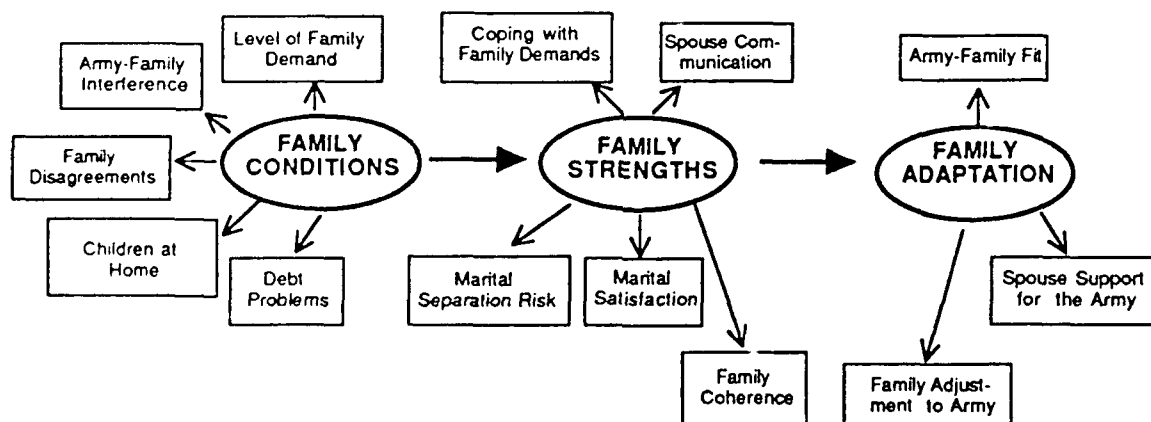
Figure 1: Relations Among Latent Variables



manifest variables were hypothesized as underlying each latent variable in the analysis (see Figure 2). Family Conditions was originally operationalized by five manifest variables: (a) Family Disagreements was a four-item scale measuring how often married couples had disagreements about spending money, giving enough affection to each other, time spent together, and the division of household chores ($\alpha = .79$).

The items for this scale were adapted from the family disagreements subscale of the Dyadic Adjustment Scale (Spanier & Cole, 1976). (b) Army - Family Interference, a four-item scale, measured how often in the last month Army responsibilities created problems in getting housework done, taking care of family needs, lack of free time to spend with your family, and being able to attend events with family members ($\alpha = .84$). (c) Level of Family Demand, an

Figure 2: Relations Among Manifest and Latent Variables



item assessing the degree to which a respondent felt their present family responsibilities were demanding was measured on a seven-point scale ranging from not at all demanding to extremely demanding. (d) Children at Home was measured by a dichotomous item indicating if children were in the household. (e) Debt Problems, an item assessing how many months, if any, respondents did not have enough money to pay their bills, was measured on a six-point scale ranging from zero to six or more months.

Family Strengths was operationalized by five manifest variables: (a) Family Coherence, a three-item scale, measured the degree to which it was felt that the family cooperates when things need to get done, the degree of hope that if a problem arises it will be solved, and the degree of discouragement when the family is going through rough times ($\alpha = .78$). These items were selected from the Sense of Family Coherence Scale (Antonovsky & Sourani, 1988). (b) Marital Separation Risk, a four-item scale, measured thoughts and activities concerning the marriage in the past year, such as if the marriage might be in trouble, thinking about a divorce or separation, seriously discussing the issue of divorce or separation, and actually filing for a divorce or separation ($\alpha = .78$). This scale was adapted from Booth, Johnson, & Edwards (1983). (c) Coping With Family Demands was defined by an item assessing success at dealing with family responsibilities measured on a seven-point scale from not at all successful to extremely successful. (d) Marital Satisfaction was assessed by an item measuring the extent to which the marriage is described as happy or unhappy measured on a seven-point scale from very unhappy to very happy. This item was also used on the National Survey of Families and Households (Bumpass & Sweet, 1988). (e) Spouse Communication was measured by an item assessing the degree of agreement with the statement, "My spouse is someone I can really talk with about things that are important to me", measured on a five-point scale ranging from strongly disagree to strongly agree.

Family Adaptation to the Army was operationalized by three measures: (a) Army-Family Fit, a three-item scale measuring the degree of perceived agreement with the spouse on their considering themselves a team working for Army goals, understanding the demands of the Army job, and the spouse doing a great deal to further the respondents career ($\alpha = .77$); (b) Spouse Support for the Army, an item measuring how supportive the spouse is of the respondent being currently in the Army, measured on a five point scale ranging from very unsupportive to very supportive; and (c) Family Adjustment to the Army, an item measuring how the family has adjusted to the demands of being an "Army family" measured on a seven-point scale ranging from extremely badly to extremely well. Table 1 presents means, standard error of the mean, variance, and minimum and maximum values for the variables used in this analysis.

Table 1

Descriptive Statistics for Manifest Variables

VARIABLE*			STD ERROR OF THE MEAN	MIN.	MAX.
	N	MEAN			
Family Conditions					
Debt Problems	6,630	5.32	0.090	1	6
Army-Family Interference	6,512	13.80	0.296	4	20
Family Disagreements	6,520	17.09	0.329	4	24
Level of Family Demand	6,654	2.51	0.103	1	7
Number of Children	6,609	1.27	0.032	1	2
Family Strengths					
Coping w/ Family Demands	6,656	5.56	0.093	1	7
Family Coherence & Strengths	6,542	17.48	0.216	3	21
Marital Satisfaction	6,508	5.72	0.100	1	7
Spouse Communication	6,629	4.28	0.061	1	5
Marital Separation Risk	6,528	7.27	0.085	4	8
Family Adaptation					
Family Adjustment to the Army*	6,547	5.43	0.105	1	7
Spouse Support for the Army*	6,598	4.12	0.076	1	5
Army-Family Fit	6,653	10.41	0.181	3	15

* Variables run from negative to positive

Data Analysis

Structural analysis was used to verify the distinctions between family conditions, family strength, and family adaptation (Bollen, 1989). This type of analysis examines the degree of fit between an hypothesized conceptual model and the statistically derived measurement model. Structural equation modeling is a multivariate technique used to observe the causal relations among variables. Lavee (1988) explains the technique as a combination of two separate models: a measurement model and a structural model which are combined into a single model. The measurement model specifies the latent variables in terms of the specific measured indicators

identified prior to testing. The structural model estimates the causal relationships among the latent variables. In practice, the models are estimated simultaneously by using maximum-likelihood analysis. The degree to which the model fits the data is assessed using a number of goodness-of-fit tests. The covariance matrix of the measured variables was structurally analyzed using the CALIS program from SAS version 6.06 (SAS Institute, 1990). Table 2 presents the correlation matrix of the observed variables.

The structural analysis was guided by the goal of finding the most parsimonious model that fit the theoretical frame described above. When specifying the model parameters, one manifest variable relating to each latent variable was standardized. For this research, the standardized variables were Family Disagreement, Family Coherence, and Army - Family Fit. To standardize these factors, their variances were fixed to one, and their covariances were free to be estimated. The loadings of the measured variables were specified so that Level of Family Demand, Army - Family Interference, Family Disagreements, Children at Home, and Debt Problems loaded on Family Conditions; Marital Satisfaction, Coping with Family Demands, Marital Separation Risk, Spouse Communication, and Family Coherence loaded on Family Strengths; and Family Adjustment to the Army, Spouse Support for the Army and Army Family Fit loaded on Family Adjustment to the Army. Initially, the programming specifications were also designed so that the error variances were free to be estimated and the correlations among the residuals were fixed at zero.

Structural equations can be evaluated by a number of tests. For the purposes of this analysis, the model was evaluated using a combination of tests. The Chi-square test was used to test improvement in the model. Since our sample was extremely large, it was difficult to use the Chi-Square test alone to derive an optimum model. Lavee (1988) states that when a small data sample is used to test a model, the Chi-square statistic is more likely to indicate a good fit than a model tested with a large data sample. As a result of the sample size, even somewhat trivial differences between the conceptual model and the data, will produce significant Chi-square tests. Unlike most significance tests, a statistically significant Chi-square coefficient indicates a poor fit of the data to the model. Therefore, all efforts were made to lower the Chi-square statistic as much as possible. The Chi-square statistic was also used to test the significance of change between two comparable models.

Other tests used in this analysis were the Goodness of Fit Index (GFI), the GFI Adjusted for Degrees of Freedom (AGFI), the Root Mean Square Residual (RMR) test, Bentler & Bonett's (1980) Non-Normed Index Delta, Bollen's (1986) Normed Index Rho1, Bollen's (1988) Non-Normed Index Delta2, and Hoelter's (1983) Critical N. The path coefficients were assessed by

Table 2

Correlation Matrix of the Measured Variables*

	Debt Problems	Family Disagreements	Level of Family Demand	Coping w/ Family Demand	Marital Satisfaction	Family Coherence & Strength	Spouse Communication	Marital Separation Risk	Family Adjustment to the Army	Spouse Support for the Army	Army-Family Fit
Debt Problems											
Fam.Disagreements	0.17										
Level of Family Demand	0.14	0.17									
Coping w/ Family Demand	0.12	0.31	**0.00								
Marital Satisfaction	0.17	0.39	0.06	0.37							
Family Strength	0.15	0.43	0.06	0.38	0.50						
Spouse Commun.	0.08	0.33	0.03	0.25	0.44	0.52					
Marital Separation Risk	0.16	0.39	0.12	0.27	0.38	0.61	0.36				
Family Adjustment	0.19	0.27	0.10	0.31	0.50	0.32	0.23	0.29			
Spouse Support	0.13	0.29	0.08	0.27	0.34	0.37	0.29	0.31	0.50		
Army-Family Fit	0.16	0.28	0.07	0.26	0.33	0.35	0.36	0.29	0.47	0.57	

* Variables run from negative to positive

** Not significant at the 0.05 level

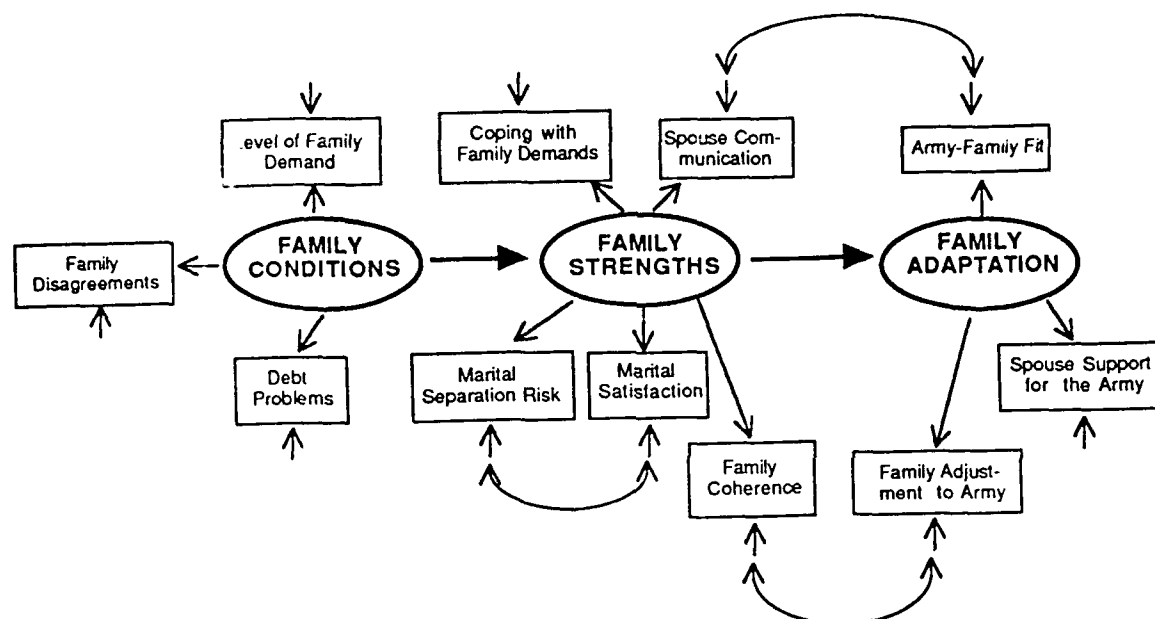
the t statistic. A t value greater than 2.0 was considered significant. The GFI and AGFI indexes are not affected by sample size. The statistics range between 0 and 1, with .9 or greater generally taken as indicating a good fit. The RMR is a measure of the mean relation between the variance-covariance matrix and the data. A value close to zero indicates a good fit. Bentler & Bonett's Delta coefficient is related to the Chi-square statistic and represents the hypothesized model in relation to the most restrictive model; the best possible fit is when Delta = 1.0. Bollen's Delta2 is less dependent than Delta on the sample size and considers the degrees of freedom in the hypothesized model; values greater than 0.9 indicate well-fit models. Bollen's rho1 considers Delta1 in relation to the degrees of freedom in the model; the maximum for Rho1 is 1.0, with a good fit displayed by 0.9 or above. The Bentler & Bonett (1980) and Bollen (1986, 1988) statistics used to further evaluate the model are incremental fit indexes. Changes to the model resulted in an effort to lower the Chi-Square and RMR test as much as possible while increasing the GFI, AGFI, Bentler & Bonett's indexes, Bollen's rho1 and Delta2 as close to 1.0 as possible.

Findings

The test of the maximum likelihood parameter estimates of the initial model using the three latent variables, Family Conditions, Family Strengths, and Family Adjustment to the Army and their associated manifest measures show that the model did converge but improvements to the model could be made. The variables Children at Home and Army - Family Interference in the measurement model explained less than 1% of the explained variance on Family Conditions and were removed from the measurement model.

Further improvements were still evident after Army - Family Interference and Children at Home were dropped from the model. The CALIS program provides the rank order of the largest normalized residual correlations, along with the recommended improvements in Chi-square from the Covariance Structure Analysis (maximum likelihood estimations using the largest La Grange multipliers in the Phi, Gamma and Beta matrices. From these analyses, correlations between three pairs of residuals were indicated which had not been allowed in the original model. In each pair, the correlated error appeared to result from the co-location of the variables in the questionnaire. In all cases, they were either back-to-back and/or written in the same format or parts of the same question. The pairs consisted of Family Coherence and Family Adjustment to the Army, and Marital Separation Risk and Marital Satisfaction, and Army - Family Fit and Spouse Communication. Figure 3 displays the Structural Model with the residual correlations defined.

Figure 3: Relations Among Variables with Correlated Residuals Defined



With the above parameters defined, the model provided a very good estimate of fit. Initially, the Chi-square value was 2845, with the fit indexes in the .82 - .93 range. The final model was greatly improved with the lowering of the Chi-square about 77% to 664.7. Table 3 indicates the values of the structural analysis test statistics for the final model. The variance (r^2) explained by Family Conditions for Family Strengths is 0.56 and the variance (r^2) explained by

Table 3

Measures of Fit for Final Structural Model

Goodness of Fit Index (GFI)	0.9794
GFI Adjusted for Degrees of Freedom (AGFI)	0.9652
Root Mean Square Residual (RMR)	0.0347
Chi-square = 664.7089 df = 39 Prob>chi**2 =	0.0001
Bentler's Comparative Fit Index	0.9651
Bentler & Bonett's (1980) Non-normed Index	0.9508
Bentler & Bonett's (1980) Normed Index	0.9630
Bollen (1986) Normed Index Rho1	0.9479
Bollen (1988) Non-normed Index Delta2	0.9651
Hoelter's (1983) Critical N	487

Figure 4: Relations Among Variables with R^2 s

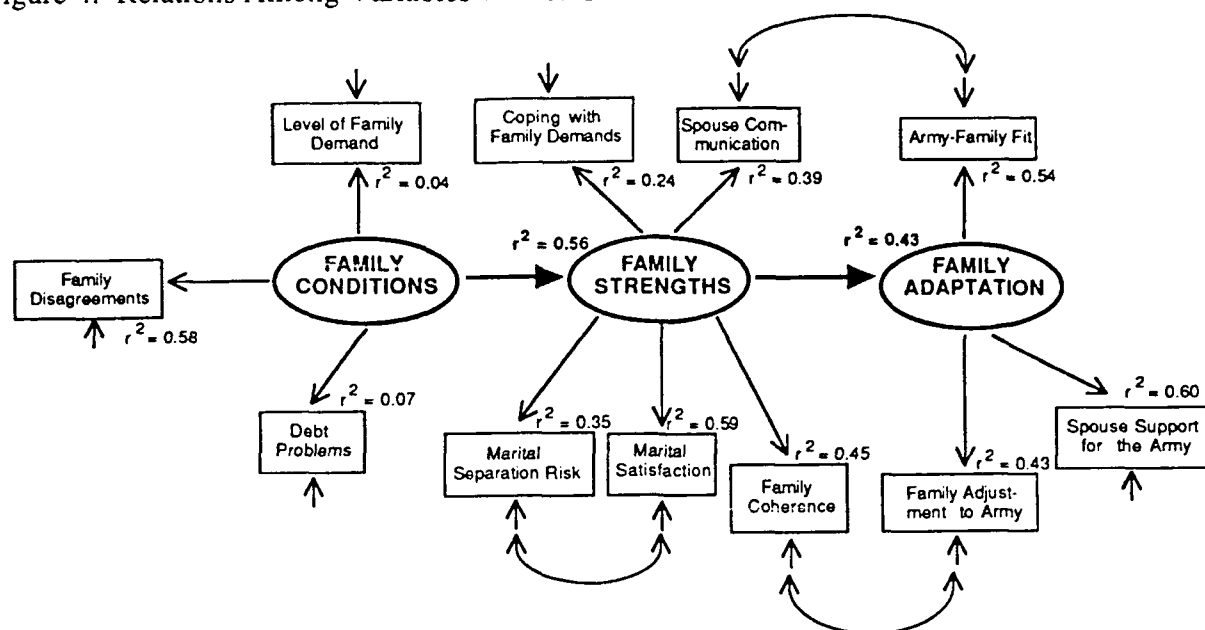


Table 4

Model Equations with Standardized Coefficients

Manifest Variable Equations

$$\begin{aligned} \text{Debt Problems} &= 0.26 \text{ X Family Conditions} + 0.97 \text{ E1} \\ \text{Family Disagreements} &= 0.76 \text{ X Family Conditions} + 0.65 \text{ E2} \\ \text{Level of Family Demands} &= 0.20 \text{ X Family Conditions} + 0.98 \text{ E3} \\ \text{Coping with Family Demands} &= 0.50 \text{ X Family Strength} + 0.87 \text{ E4} \\ \text{Family Coherence} &= 0.67 \text{ X Family Strength} + 0.74 \text{ E5} \\ \text{Marital Satisfaction} &= 0.77 \text{ X Family Strength} + 0.64 \text{ E6} \\ \text{Spouse Communication} &= 0.63 \text{ X Family Strength} + 0.78 \text{ E7} \\ \text{Marital Separation Risk} &= 0.59 \text{ X Family Strength} + 0.81 \text{ E8} \\ \text{Family Adjustment to Army} &= 0.65 \text{ X Family Adaptation} + 0.76 \text{ E9} \\ \text{Spouse Support for the Army} &= 0.77 \text{ X Family Adaptation} + 0.63 \text{ E10} \\ \text{Army Family Fit} &= 0.73 \text{ X Family Adaptation} + 0.68 \text{ E11} \end{aligned}$$

Latent Variable Equations

$$\begin{aligned} \text{Family Strength} &= 0.75 \text{ X Family Conditions} + .66 \text{ D1} \\ \text{Family Adaptation} &= 0.66 \text{ X Family Strength} + .75 \text{ D2} \end{aligned}$$

Family Strengths for Family Adaptation is 0.43 (see Figure 4). The variable equations with standardized coefficients for the relations among the variables are displayed in Table 4. All variable relations were significant ($t > 2.0$).

The structural analysis indicated that the latent variables of Family Conditions, Family Strengths and Family Adaptation are statistically independent. Moreover, each of the manifest variables predicting Family Strength and Adaptation are statistically strong predictors, indicating an efficient model. The parameter estimates of Family Strength range from .88 for Marital Separation Risk to 1.15 for Marital Satisfaction when Family Coherence is set at 1.0. The parameter estimates of Family Adaptation range from .89 for Family Adjustment to the Army to 1.05 for Spouse Support when Army-Family Fit is set at 1.0.

Four of the tests utilized to evaluate this model were measures of overall model fit. The advantage of these types of indexes is that they evaluate the whole model and can indicate problems that cannot be shown through model component tests of equations and parameter estimates (Bollen, 1989). The GFI of 0.98 and AGFI of 0.97 indicate that the model has quite respectable fit. The RMR of 0.03 is low also indicating a good fit. The Chi-square with 39 degrees of freedom was 664.71 ($p < 0.001$), a significant departure from the model's estimated variance-covariance matrix. It should be noted however that this value is much lower than the Chi-square value of the original model. The Chi-square statistic is very sensitive to sample size. As a result of the large sample in this study, this statistic is not a valid test of the goodness of fit of the model.

Other tests used to further evaluate the model were incremental fit indexes by Bentler and Bonett (1980) and Bollen (1986, 1988). These indexes are considered incremental because they measure a proportionate reduction in the fitting function (or chi-square) when moving from the restrictive to the maintained theoretical model (Bollen, 1989). The Bentler and Bonett indexes are used to fit the less restrictive maintained model to the baseline or most restrictive model. A relation of 1.0 would indicate the "best fit" of the maintained model to the restrictive model. The values of 0.95 for the Non-normed Index and 0.96 for the normed index indicate a good fit. Bollen's Normed Index Rho relates Bentler and Bonett Normed Index to the degrees of freedom in the model. Bollen (1988) describes a coefficient Delta2 which is less dependent on the sample size. Values of 0.95 and 0.97 for Bollen's coefficients Rho and Delta2 respectively are good values. One additional test used to monitor the evaluation was Hoelter's (1983) Critical N test. Hoelter's suggested cutoff is $CN > 200$, the value of 487 is well above this minimum level.

Scaling

Based on the results of the structural analysis, a Family Adjustment to the Army scale and a Family Strengths scale were created¹. Each scale was formed by standardizing the items and/or scales which contribute to the latent constructs. Each item/scale was then weighted by its respective standardized scoring coefficient from a factor analysis. The weighted items were then summed and standardized scales were formed. Mean substitution of the remaining existing values replaced missing values where 2 or more non-missing values existed. The results from the synthesis of the Family Adaptation to the Army and Family Strengths scales are displayed on Table 5. The analysis of internal reliability indicated that the scales, Adaptation to the Army and Family Strengths, displayed alpha coefficients of 0.79 and 0.83, respectively.

The use of structural modeling as a basis for constructing these scales demonstrates the effectiveness of this statistical approach for refining scale elements. This is especially useful when the pool of items and sub-scales may share loadings in a factor analysis and when there are correlated errors that may encourage cross-loadings of variables. The structural modeling procedure permitted the latent variables to be theoretically derived, efficiently trimmed and the scales to be produced with relatively high levels of internal reliability.

Discussion

The investigation confirmed the theoretical and empirical distinctiveness of the concepts of family adaptation and family strengths. This confirmation was demonstrated with a set of latent variable structural analysis procedures that sequentially tested and improved the model in order to provide optimum sets of indicators for each construct. The resulting model demonstrated a high degree of fit to the data on all tests that were performed.

¹ While it was necessary to form another construct Family Conditions to complete the model, validating this construct was not an objective of this study. This latent construct was used as an exploratory concept for this analysis. More work needs to be performed to validate this construct for use as a measurement scale.

Table 5

Standardized Weights and Scale Characteristics

	<u>Standardized Weights</u>
Family Adaptation	
Family Adjustment to the Army	0.39154
Spouse Support for the Army	0.41505
Army Family Fit	0.40875
Family Strengths	
Family Coherence and Strength	0.28374
Marital Satisfaction	0.32060
Spouse Communication	0.27251
Marital Separation Risk	0.27208
Coping with Family Demands	0.21806

Scale Characteristics

Family Adaptation to the Army

N	Minimum	Maximum	Range	Mean	Std. Dev.
6656	-3.728	1.732	5.49	0.003	1.020

Family Strengths

N	Minimum	Maximum	Range	Mean	Std. Dev.
6672	-4.738	1.473	6.448	-0.001	1.013

The information from this research is potentially very important to our improved understanding of military family wellness. As was noted in the Army Family White Paper, "we must research and promote the positive aspects of Army families as our primary goal" (Chief of Staff, U. S. Army, no page). This research identifies the characteristics of Army families most associated with positive adaptation to the military, thus supporting this objective. Also important to the Army is the finding that family adaptation and strength can be identified with relatively few factors indicating that interventions to support families can efficiently be targeted.

The ability to separate family strengths from family adaptation is very important to subsequent analyses of family processes. Family strengths, as this research indicates, represent characteristics internal to the family that help it buffer the demands and stresses that often accompany marriage and parenthood. Family strength comes from the ability to solve problems, maintain communication, have mutual commitments, and express satisfaction with the partner and the relationship. These qualities help predict family adaptation to organizational demands but they are not the same concepts. Family adaptation in contrast, is the state of being adaptive, having made the appropriate adjustments to reorganize the family in response to organizational demands. This does not mean that the family has completely adjusted to what the Army or any other organization may require; it means that they have made a truce to at least temporarily use their internal strengths to meet the demands placed on them.

The ability to predict family adaptation with an efficient measure of family strength can have substantial benefits to researchers and policy makers. For researchers it means that the predictive measure that is often needed in models of personnel performance and retention/turnover can be distinctively derived through family adaptation without having to separately specify the predictor of family strength. This allows for more efficient regression models since it is the adaptation of the family that is of most concern to organizational researchers. The variables used in this analysis are sufficiently generic that they can be applied to many organizational contexts with only a minor relabeling of the specific relevant organization, i.e., military service, religious denomination or corporation.

For service providers, there is a need to anticipate problems associated with poor family adaptation and to develop programs that build family strengths. As was noted in the Army Family White Paper, the Army must "spend our money where it will make the greatest difference... we must define areas where research and studies are necessary to target effectively resources and programs (Chief of Staff, U. S. Army, 1983, p. 20). This research indicates that services targeted toward preparing families ahead of time for potential problems, improving their understanding of the Army mission and increasing spouse support for the Army, even temporarily, can pay significant dividends in family adaptation to Army demands.

For policy makers, it is also important to understand the factors that need to be reinforced in order for families to enhance their adaptation. These include the key manifest variables in the family strengths scale. Organizations such as the Army can significantly hamper family adaptation when or if they reduce opportunities for family problem solving, family communication, or commitments to the marriage. Unit and community level programs must emphasize these key family needs in order to maintain adaptation. For example, when

separations are required, making low to no cost communications between family members not only increases family satisfaction and strengths but it also continues family support for the work organization and reduces stress on the separated member.

There are several key strengths and limitations of this research that should be noted. On the positive side, the data for this investigation are from a large probability sample of military service members. The scales developed for the analyses are highly reliable and the multidimensional scaling offers sufficiently diverse indicators of both family strengths and adaptation. The research is limited, however, by the lack of a spouse or joint family measure of family strength and adaptation. These data only came from the service member, nine out of ten of whom are men.

In conclusion, this research may contribute significantly to the ability of researchers and policy makers to define the characteristics of family strength and family adaptations. Future research should seriously consider the measures that were generated as efficient indicators of these concepts. It is important nevertheless for these data to be replicated with other samples in order to confirm their stability and replicability. A measure of family adaptation that can be efficiently applied in multiple settings is certainly needed. Even more important, however, is the need to extend the analysis to include both spouses since the qualities that may represent family strength and adaptation from the joint perspective could vary somewhat from that reported here. Fortunately, the AFRP data will permit such an analysis and this is planned for the future.

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